# TOP WEATHER EVENTS OF 2009

(IN ORDER OF OCCURRENCE)

## 1.) January Cold Streak

January 2009 was a very cold month for southern Wisconsin. Milwaukee's average monthly temperature for the month was 4.9 degrees below normal. Madison's average monthly temperature was 6.7 degrees below normal. While cold, these do not rank in the top ten coldest Januaries. Also, Milwaukee had a streak of 24 days with high temperatures 31 degrees or colder. This ranks as the 16th longest streak with highs 31 degrees or below. The longest streak was 46 days, ending on February, 24, 1978. Madison had a streak of 26 days with high temperatures of 31 degrees or colder. The longest streak was 53 days, ending on February 5, 1983. The 2009 streaks in southern Wisconsin ended on January 31st, when high temperatures reached 40 degrees at Milwaukee and 39 degrees at Madison.

La Crosse Municipal Airport had an average temperature of 8.8 degrees. This was 7.1 degrees below the normal of 15.9 degrees. This was the coldest January since 1994 when the average temperature was 6.0 degrees. On both January 15th (-26F) and January 16th (-25F)...La Crosse Municipal Airport had a low temperature at or below 25 degrees. This has only happened 23 times since October 15 1872. The last time was on February 3rd and February 4th 1996. The most consecutive days with low temperatures this cold was 6 days from January 30th through February 4th 1996.

**January 13-16 Cold** in west-central Wisconsin – Bitter cold and extreme low wind chill values impacted the region for several days. The coldest January since 1994 saw low wind chill values down to -30F to -45F.

## 2.) Snow Drought in La Crosse

After a very snowy start to winter in which La Crosse had their third earliest date (January 12th) in a snow season to reach 40 inches in La Crosse (normal snowfall is 44.3 inches in a snow season), La Crosse experienced a 32-day stretch without any snow (January 18th to February 18th). It was only the seventh time in a meteorological winter that La Crosse has went that long without seeing measurable snow. Snow records date back to 1908. The longest streak was 44 days during the winter of 2006-07.

## 3.) February 21st Winter Storm

Widespread snow overspread southern Wisconsin after midnight on the evening of the 20th and continued through the early evening of the 21st. Snowfall amounts of 5 to 8 inches were observed with the heaviest amounts over southeast Wisconsin. The snow was related to a strong upper-level disturbance originating in Alberta, Canada tracked southeast into the Upper Mississippi River Valley overnight on February 20th. Meanwhile, a surface low pressure system developed over Missouri which tracked northeast across far southeast Wisconsin (between Milwaukee and Racine) on the afternoon of the 21st.

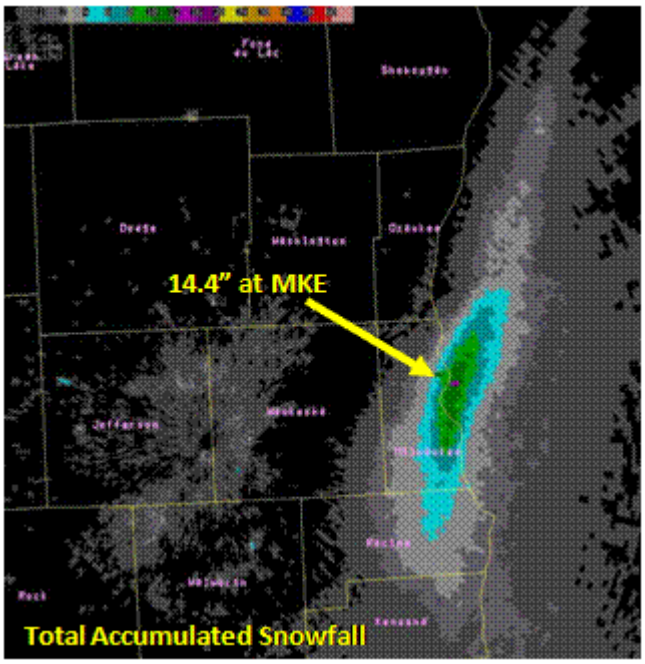
## 4.) February 26-27th Winter Storm

Accumulations of 6 to 10.5 inches were reported across the northeastern part of the state around the Bay of Green Bay. During the same storm, another band of 6 to 9 inches occurred over the west central counties with up to 8.8 inches measured at Rice Lake in Barron County.

## 5.) Coldest Meteorological Winter in La Crosse since 1981-82

The average temperature at La Crosse Municipal Airport was 15.0 degrees for the 3-month period of December-January-February. This was 5.0 degrees below the 1971-2000 average of 20.0 degrees. This was the coldest winter since the winter of 1981-82 when the average temperature was 13.2 degrees. This winter was the 27th coldest winter ever recorded in La Crosse. Temperature records date back to the winter of 1872-73.

## 6.) March 2nd Lake Effect Snow Event




Significant lake-effect snowfall events are relatively rare on the west side of Lake Michigan. Conditions must line up perfectly with a northeasterly wind, cold air aloft, and open lake waters. On March 2nd, a single band of lake effect snow affected extreme southeast Wisconsin. Snow began falling before midnight on March 1 at Milwaukee International Airport. The band continued to intensify and expand southwestward. By daybreak, 8 inches had fallen at the airport and by the afternoon, 14.4 inches had fallen. The band set up directly over the Milwaukee airport with most locations surrounding the airport receiving lesser amounts. This snow event set a new record for calendar day snowfall. For the calendar day of March 2nd, 14.2 inches fell at Mitchell International Airport which broke the previous record set in 2002 of 9.4 inches.
http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=22559&source=2

## 7.) March 8th Winter Storm

A winter storm dumped 6 to around 8 inches of wet snow from around Wautoma to the Kewaunee County area. Further south, freezing rain accumulated to 1/10 to 2/10 of an inch in a band from Grant County northeast to Manitowoc County.

## 8.) Two-Year Snowfall Record at Madison

With an above-normal snowfall total of 72.0 inches for the 2008-2009 winter season, Madison set a new two-year snowfall record. The 2007-2008 and 2008-2009 winter seasons combined for 173.4 inches, breaking the old record of 153.9 inches for 2006-2008. Milwaukee experienced its second largest two-year snowfall total with 175.1 inches. The record of 183.9 inches was set is 1885-1887.

## 9.) March 28th – 29th Winter Storm

The same low pressure system that produced a major blizzard over the central/southern Plains on March 26-28th and produced up to 28 inches of snow in south central Kansas, tracked northeast from southeast Missouri to southeast Lower Michigan overnight on March 28th and during the morning of the 29th. After a mix of snow, sleet, and freezing rain over portions of southern Wisconsin during the evening of the 28th, precipitation turned to all snow by the early morning hours of the 29th. Dozens of accidents were reported around the interstate system during the onset of the precipitation. Because the system tracked further to the southeast than models had indicated, the heaviest snow was confined to the southeast corner of the state…near Racine and Kenosha. Snow totals there ranged from 6 to 8.5 inches with a general 2 to 4 inches over the remainder of southern Wisconsin. Winds gusted in excess of 40 mph near Lake Michigan, making for near-blizzard conditions at times.
http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=23556&source=2

## 10.) La Crosse Has Very Little Snow in March

During March 2009...the snow observer near La Crosse Municipal Airport only measured 1.2 inches of snow. This was 6.0 inches below the normal of 7.2 inches. This tied 1921 and 1988 for the eleventh least amount of snow to fall during a March. This was least amount of snow in a March since 1994 when just 0.8 inches of snow fell. The least amount of March snow was a trace and that occurred back in 1919...1973...1986...and 1990

## 11.) March – New record rainfall at Madison

March 2009 was the wettest March on record at Madison. A record monthly rainfall total of 6.19 inches broke the old record of 5.46 inches previously set in March 1998.

## 12.) Severe Hail Threshold Increases to 1" on April 1st

Beginning April 1st, offices in the National Weather Service's Central Region (Wisconsin included) increased the criteria for severe hail from ¾" diameter to 1" diameter. There was research done that shows significant damage to property does not occur until hail reaches one inch (quarter size). Raising the threshold means there will be fewer warnings issued for marginal events, and when warnings are issued, they will be for storms that have a greater damage potential.

## 13.) April 19-21st Winter Storm

This winter storm was the biggest of the snow storms during the 2008-09 winter season in terms of snow amounts. Anywhere from 4 to 17 inches were reported across parts of north-central and northeast Wisconsin north of a line from Ashland to Antigo to Wausaukee. Gile, in Iron County, reported the 17 inches. Crandon measured 13.1 inches.

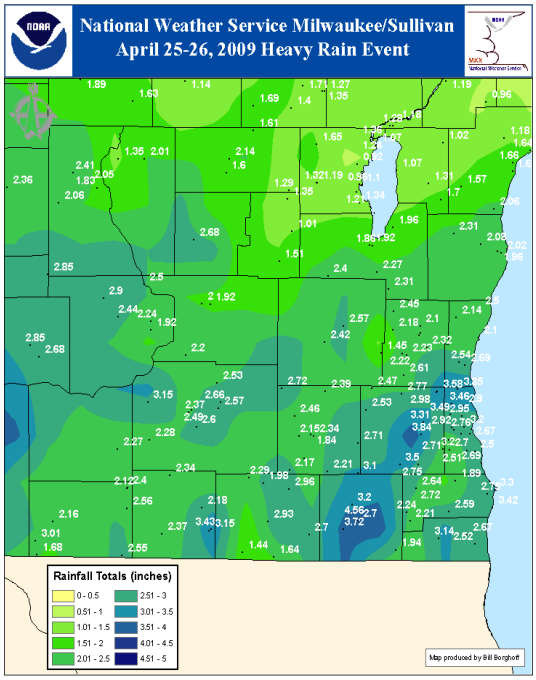
## 14.) Seventh Warmest April Day in La Crosse

On April 24th...La Crosse Municipal Airport had a high temperature of 90 degrees. This was La Crosse's seventh warmest April day and the warmest April temperature since April 14, 2003. The warmest temperature ever recorded in an April was 93 degrees on April 29, 1910 and April 22, 1980. A passing cold front clashed with the warm air though, leading to severe

thunderstorms with large hail over parts of western Wisconsin with hail as large as ping pong balls (2”).

## 15.) April 25th-26th Heavy Rain Event

After temperatures rose into the mid to upper 80s on April 24th, a backdoor cold front sagged south and stalled over northern Illinois on April 25th and remained in place through late afternoon, April 26th. Rounds of showers and thunderstorms developed north of this front and tracked across southern Wisconsin, beginning during the late morning hours on the 25th, and continuing through the afternoon of the 26th. Very heavy rain accompanied some of the storms, resulting in widespread rain totals of 2 to 4 inches during the 48-hour period from 7 am on the 25th to 7 am on the 27th. Many rivers over the area rose rapidly to near or above flood stage as a result, particularly the Fox, the Rock, the Root River Canal, the Root River, and the Sugar River.




**April 26 Brief Tornado / Flash Flooding** – Grant County - Severe Thunderstorms produced an isolated tornado in Grant County of southwest Wisconsin (EF0) along with flash flooding. Area rivers rose out of their banks and mudslides impacted some roadways.

## 16.) May 13th Microburst in Dodge County

At about 9:45 to 9:55 pm on May 13th, a small downburst, known as a microburst, affected a 2 mile swath from just southwest of Farmersville to the Knowles area in northeast Dodge County. This intense microburst generated maximum wind gusts in the 75 to 100 mph range,

based on a storm survey conducted by the National Weather Service. The damage swath ranged from 50 to 75 yards in width. There were no fatalities or injuries, but at least 7 cows were killed in a barn that was destroyed. Otherwise, at least another half-dozen pole sheds or storage sheds were damaged or destroyed, and at least a couple homes sustained minor damage. An estimated 100 to 150 trees were damaged or pushed over, and a couple road signs were damaged. The majority of the damage was across Farmersville. The damage survey indicated that most damaged trees west of County Highway V were pointing toward the northwest to west direction, while most of the damaged trees and debris east of CTH V were pointing toward the northeast. This splaying damage pattern is very typical of downburst damage patterns.
http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=27694&source=2

## 17.) June 18-19th Severe weather/tornadoes/heavy rain and flooding

A warm front set up across far southern Wisconsin on the afternoon of June 18th as a series of upper level disturbances moved eastward into the Upper Midwest. A line of severe thunderstorms formed in an area of very warm, unstable air and moved into southern Wisconsin overnight on the 18th. These storms were followed by 2 additional rounds of severe thunderstorms on the morning of the 19th and the afternoon/evening of the 19th. The storms produced damaging winds, hail up to 2.75", dangerous lightning, and weak EFO tornadoes in Iowa and Kenosha counties. These thunderstorms also dumped very heavy rain up to 6.9 inches over a relatively short period of time, causing numerous reports of flash flooding across Dane, Waukesha, and Milwaukee counties. Severe thunderstorms producing large hail, strong winds, and some flash flooding also hit central and southwest Wisconsin. Hail reached golf ball size with 60 mph winds. Several homes in Werley, WI (Grant Co.) were evacuated.

## 18.) June 23rd Tornado near Milton -- Single Cell Thunderstorm

A single thunderstorm cell developed quickly in Rock County in the evening of June 23rd and produced an EF0 land spout tornado. This storm was very small in size and the only one in southern Wisconsin. The first funnel cloud reports came in just 15 minutes after the cell developed. It weakened and the cell dissipated about half an hour later. The first report of a funnel cloud was received at 7:55 pm from a pilot flying into the Janesville airport. Subsequent funnel and tornado reports were received from the Janesville airport tower, trained spotters and the public. A damage survey and radar images indicate the tornado touched down at approximately 8:10 pm and moved southeast with a damage path 1.6 miles long. The tornado produced minimal damage around Clear Lake. A screen porch including metal foundation was flipped over a trailer just southeast of Clear Lake. Some tree and power line damage was also observed mostly southeast of Clear Lake.
http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=29107&source=2

## 19.) July -- Coldest on Record at Madison…Third Coldest at La Crosse

July began with the coldest maximum temperature (63 degrees on July 1st) in Madison and ended as the coldest month ever on record. The average temperature in Madison for the month was 65.7 degrees which is 5.9 degrees below normal. The previous record from July 1891 was 66.7 degrees. High temperatures only reached 80 degrees or more 7 times. The highest maximum temperature reached was 82 degrees on July 5th, 6th, and 27th. This also broke a

record where the highest temperature for the month did not reach at least 84 degrees. The previous low-max for July in Madison 84 degrees in 1869.

La Crosse Municipal Airport had an average temperature of 68.1 degrees. This was 5.9 degrees below the normal of 74.0 degrees. This was the third coldest July in La Crosse. This was the coldest July in La Crosse since 1992 (average temperature 68.0 degrees). The coldest July occurred back in 1891 when the average temperature was 66.9 degrees. The warmest temperature at La Crosse Municipal Airport was just 86 degrees on the 27th. Only July 1922 (also 86 degrees) failed to have a warmer temperature in a July. In addition, July 2009 was only the eleventh July since 1873 to fail to have at least one 90 degree day. The last time this occurred was back in 1993 when the warmest temperature of the month was 87 degrees.

During July 2009...the following locations in southwestern Wisconsin experienced their coldest July on record...

| Location | July 2009 Average Temperature (˚F) | Previous Coldest July |
|---|---|---|
| Gays Mills | 65.0 | 65.0˚F in 2009 - tied |
| Platteville | 65.5 | 66.3˚F in 1992 |
| Prairie du Chien | 66.3 | 68.3˚F in 1992 |
| Richland Center | 64.6 | 65.5˚F in 1992 |

Other locations in southwest Wisconsin in which July 2009 finished in their top ten coldest Julys...

| Location | July 2009 Average Temperature (˚F) | Rank | Previous Coldest July |
|---|---|---|---|
| La Crosse | 68.1 | 3rd coldest | 66.9˚F in 1891 |
| Sparta | 66.1 | 2nd coldest | 65.7˚F in 1992 |
| Viroqua | 64.0 | 2nd coldest | 63.0˚F in 1992 |

http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=29743&source=2

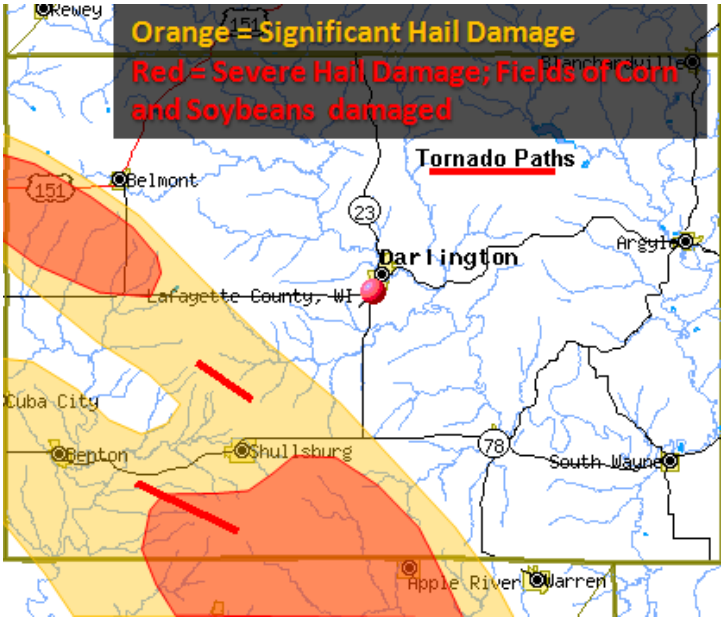
## 20.) Drought across Northern and Western Wisconsin

Abnormally dry weather from August 2008 through the early autumn of 2009 resulted in moderate (D1) to severe (D2) drought conditions developing across west-central and central Wisconsin. From August 2008 through August 2009, precipitation deficits range from 6 to 12 inches below normal. Fortunately the cool summer helped limit some of the damage by this drought. An abnormally wet October ended the drought in these areas.

North-central and northwest Wisconsin has seen a prolonged period of dry weather over the past 3 years. Precipitation deficits during this time period are 15 to 20 inches below normal. This has caused the lake levels in this area of the state to exceptionally low. The combination of short and long term deficits caused this area to enter into extreme drought (D3) in mid September 2009. After a wet October and early November, the drought condition had

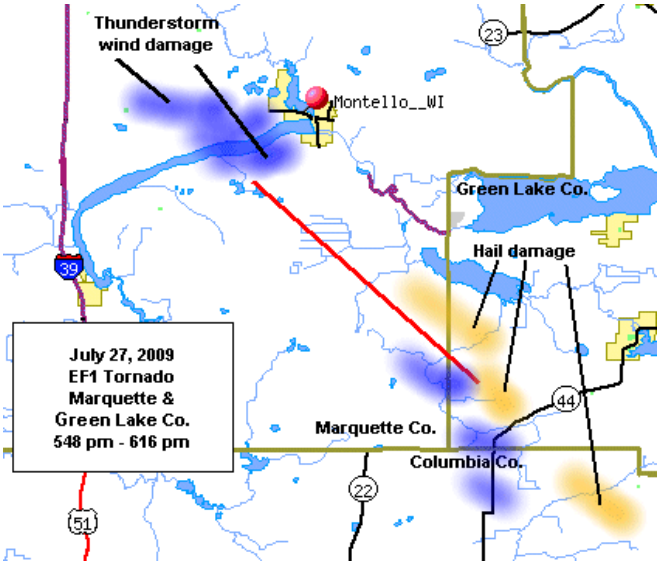
improved a bit and in early December, 2009, this area was experiencing moderate (D1) to severe (D2) drought conditions.

## 21.) July 24th Grant & Lafayette County Severe Weather--Tornadoes and Hail




Grant and Lafayette Counties experienced two rounds of severe weather during the late afternoon and evening hours of July 24th. Two super-cell thunderstorms moved southeast out of Grant County through the southwest portion of Lafayette County and each generated a tornado, damaging downburst winds, large damaging hail up to 3 inches in diameter, and heavy rains that led to flash flooding. The first tornado was rated an EF1 with winds between 100-105 mph. The second tornado was rated an EF1 with winds around 90 mph. Wind and hail damage swaths were up to 9 miles wide with these storms and numerous corn and soybean crops were destroyed.

## 22.) July 27th Severe weather/tornadoes




Severe weather rolled through parts of central Wisconsin during the late afternoon and early evening of Monday, July 27. A low pressure system and associated cold front tracked toward the area, setting off scattered showers and thunderstorms. Numerous reports of severe weather were gathered, ranging from large hail, to damaging winds, to flash flooding, and even a couple of tornadoes. The first tornado tracked through southeastern Marquette County and into the southwest corner of Green Lake County and was rated an EF-1. The tornado periodically weakened along its track which led to sporadic tree and crop damage. Heavy rains accompanied the supercell thunderstorm that generated this tornado and southwest Green County received up to 4 inches of rain. The 2nd tornado tracked just northeast of Gratiot in Lafayette County and was rated an EF-0. Tree limbs were blown down and smashed three vehicles. Some trees and roofs were also blown down. All in all, Lafayette County was probably the hardest hit Wisconsin County in 2009 due to floods, tornadoes, wind damage, and hail damage.

The first tornado to be a confirmed tornado in Crawford County since June 17, 1987 occurred on July 27th. It covered about a 4 mile length in northern Crawford County, WI, from one mile east of Fairview to five miles west of Soldiers Grove. The tornado knocked down numerous trees, hit a few power lines, and destroyed or damaged a few barns and outbuildings along its short path. While most of the damage was EF0 (relatively weak), one farm had quite a bit of EF1 damage that included a damaged LP tank. Based on interviews and calls to Crawford County dispatch, the tornado hit around 5:16 p.m. and continued for approx. 10 minutes as it traveled northeast.
http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=29966&source=2

## 23.) Second Longest Stretch of Normal/Below Normal Days Comes to an End in La Crosse

On August 3rd, the average temperature at La Crosse Municipal Airport was 76 degrees. This was 2 degrees above the normal of 74 degrees. This ended a streak of 36 consecutive day (June 28 to August 2) in which the daily average temperature was either normal or below normal. This was the second longest stretch of days. The longest stretch of either normal or below normal days was 38 days back in 1960 (February 18th through March 26th).

## 24.) Strong Tornado in St. Croix County –August 8th

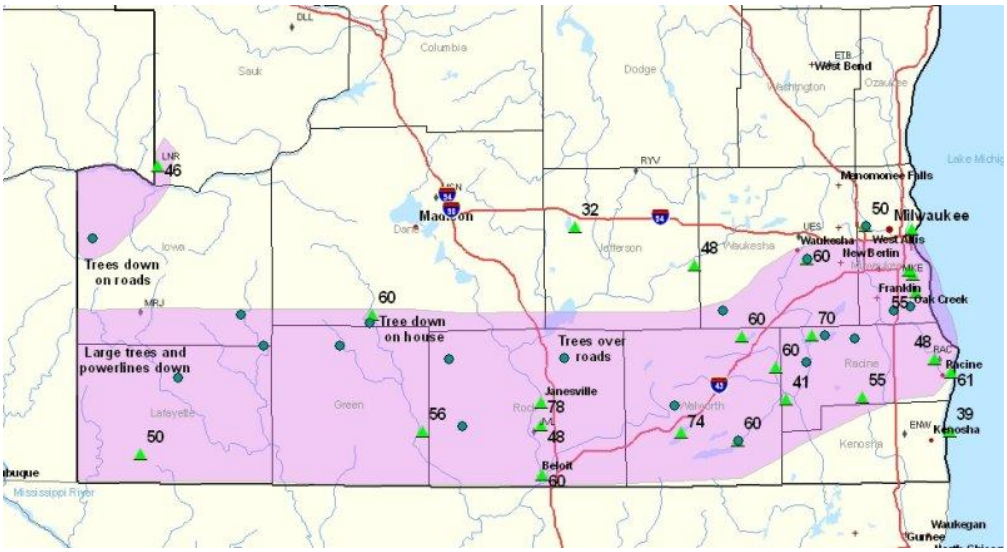
An EF-1 tornado struck Burkhardt in St. Croix County on August 8th. The tornado was five miles long. Numerous trees were snapped off or uprooted. Several garages and a boat were blown away. This tornado was also accompanied by very strong southerly inflow winds that also knocked down numerous trees 1/4 to 1/2 mile south of the tornado. Damage from this tornado was estimated to be $500K.

**Heavy Rains in Western Wisconsin** – Slow moving thunderstorms produced widespread 3 to 7 inch rainfalls across parts of Buffalo, Trempealeau, and Jackson Counties in western Wisconsin. Many area roads were flooded and the Buffalo River quickly rose out of its banks. The Hixton, WI area reported 6.50" with 4.22" at Mondovi. Counties were put under Flash Flood Warnings 18 times that day. Several days later, additional heavy rain fell in the same area leading to numerous mudslides.

## 25.) Severe Weather and Heavy Rain – August 9th

Severe thunderstorms rolled crossed southern Wisconsin on Sunday, August 9. The first storm to move into the state had tracked across Iowa leaving a path of wind damage. As the storm entered Wisconsin, it briefly weakened over Lafayette and Green counties and then picked up strength over Rock and Walworth counties into Racine and southern Milwaukee counties. This storm caused extensive wind damage across Walworth and Racine counties where trees and power lines were reported down across both counties. The second round of storms moved into Iowa and Lafayette counties later in the afternoon, bringing wind gusts and damage to Iowa and Lafayette counties all the way across to Milwaukee and Racine counties. The map below shows the swath of wind damage across southern Wisconsin. Triangle markers indicate

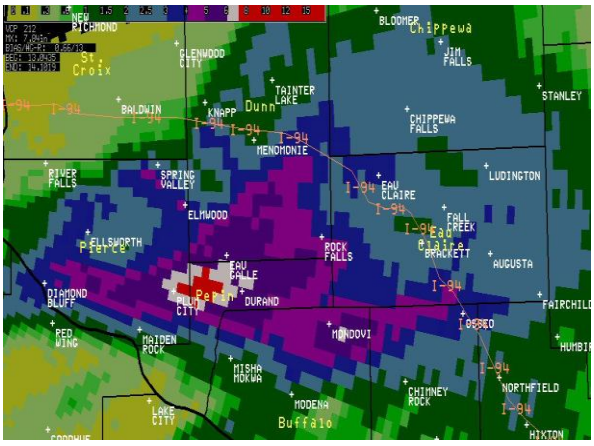
measured or estimated wind gusts, some including damage reports. Wind speeds are shown in mph. Green circles are reports of wind damage, mostly to trees and power lines.




http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=30349&source=2

## 26.) Heavy Rain in western Wisconsin – August 13-14th

Between 10 pm and 12 midnight, nearly 5 inches of rain fell in portions of Pierce and Pepin counties, causing significant flash flooding, with mud slides reported near Ella, Wisconsin. This was along County Road N, near the Chippewa River. A local observer in Arkansaw, Wisconsin reported 6.5 inches of rainfall between 10 pm and 130 am. The heaviest rainfall, based on local observers and radar estimates, indicated a band of five to seven inches fell between Esdaile, Plum City, Arkansaw, Durand, and Rock Falls, Wisconsin. Flash flood damages amounted to $1.575M in Pierce, Pepin, Dunn and Eau Claire Counties $1M was in Pepin County.

## 27.) 7th Coolest Summer on record for Wisconsin

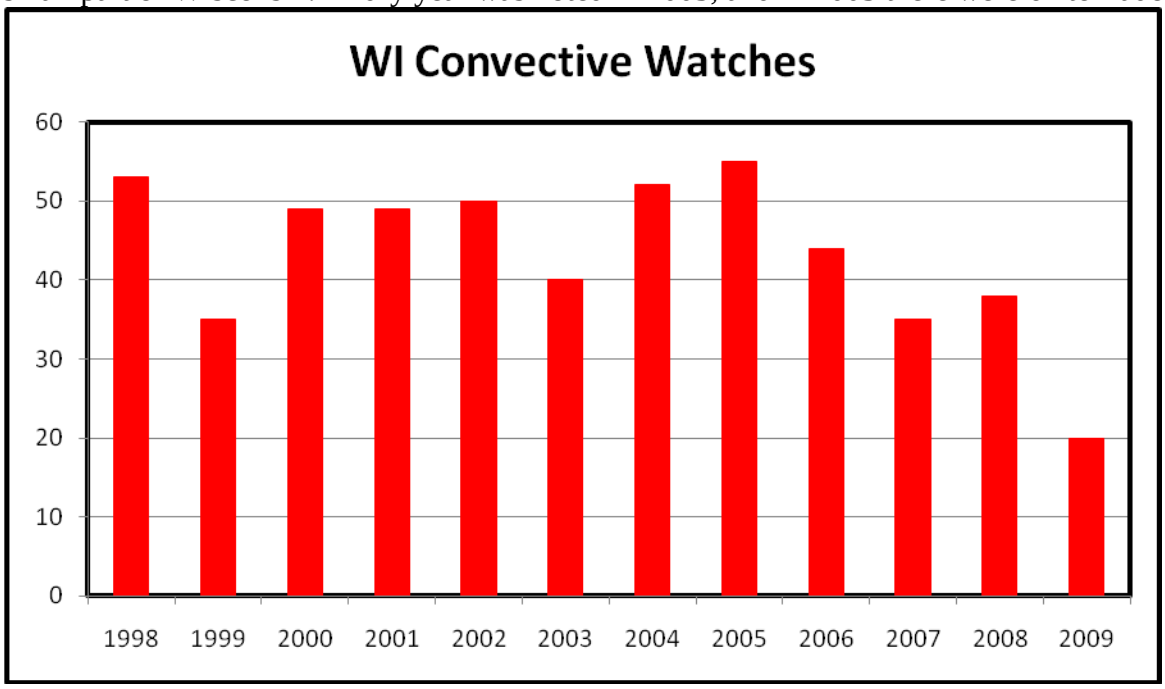
The summer of 2009 saw below-average temperatures in the U.S. The average June-August 2009 temperature was recorded as the 34th coolest on record. August was also below the long-term average. For the 2009 summer, the average U.S. temperature of 71.7 degrees F was 0.4 degrees F below the 20th century average. Only the Northwest U.S. averaged above-normal temperatures. A recurring upper-level trough held the June-August temperatures down in the central states. The upper-level flow over Wisconsin was stronger than normal from the north and northwest, which brought cooler and drier air down from Canada on a more frequent basis. Because of this overall pattern, Wisconsin experienced its 7th coolest summer of record. Madison was 2.4 degrees F below normal and Milwaukee was 2.1 degrees F below normal for the summer. Madison was also fairly dry and was 3.71 inches below normal precipitation for the summer.

## 28.) Below Normal Amount of Severe Weather Across Wisconsin in 2009

Wisconsin experienced only about half of the usual amount of convective severe weather that strikes the state in the form of tornadoes, floods, damaging thunderstorm downburst winds, and damaging large hail. In 2009, only 20 convective watches were issued for at least a small part of the state (tornado watch or severe thunderstorm watch). The yearly average for the past 12 years is 43. In 2005, 55 convective severe weather watches were issued by The Storm Prediction Center in Norman, OK. Correspondingly, fewer numbers of convective warnings were issued, and there were fewer numbers of documented severe weather events.

In northeast and north-central Wisconsin, only 12 severe weather events were reported in that part of the state, the fewest number ever since records began (1990). In fact, no tornadoes were reported in northeast and north-central Wisconsin, only the second time that's ever happened in over 30 years of data. During what normally is the height of the severe weather season, there was a 100 day stretch with no severe reports from April 25 to August 2.

Below is a line graph of the number of convective severe weather watches issued for at least a small part of Wisconsin. A dry year was noted in 2003, and in 2005 there were 62 tornadoes.



## 29.) Record Daily Rainfall for month of September at Madison

Several periods of moderate to heavy rain fell over Madison on September 22, 2009. A new record daily rainfall was set for Madison. Total rainfall at the Dane County Regional Airport in Madison was 3.67". The previous record was 1.37" in 1988. In addition, this amount sets the record for any daily rainfall in the month of September. The previous record daily rainfall for September was 3.40" set on September 18th, 1874. This is also one of the greatest 1 day rainfall totals for any day of any month in Madison. It ties for 8th all time greatest rainfall. The heavy rainfall resulted in some urban flooding when water collected in low spots. http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=mkx&storyid=31341&source=2

## 30.) 10th Driest…Lightest Wind Average for September on record in La Crosse

During September 2009, La Crosse Municipal Airport only received 1.02 inches of precipitation. This was 2.38 inches below the normal of 3.40 inches. This makes this September the tenth driest September and the driest since 1998 when just 0.85 inches of precipitation fell (7th driest). The driest September occurred back in 1940 when just 0.29 inches of precipitation fell.

On September 21st, a trace of precipitation fell at La Crosse Municipal Airport. This was the first precipitation since August 30th. This 22 day stretch without any precipitation was the second longest on record. The only other streak which was longer was a 24 day stretch back in 1953 (October 26th to November 18th).

During September 2009, the average wind speed at La Crosse Municipal Airport was just 5.0 mph. This was the lightest average wind speed for the month of September. The previous record was 6.6 mph back in 1987 and 2001. Normally...the average monthly wind speed for September is 8.3 mph. The average winds for September 2009 was the second lowest monthly wind speed ever recorded at La Crosse. The only month to have a lighter average monthly wind speed was February 1974 when the average wind speed was just 4.8 mph. Monthly wind records for La Crosse date back to 1948.

## 31.) Early October Snow in West-central Wisconsin

An early snowstorm affected portions of west central Wisconsin between the Twin Cities and Eau Claire during the morning and afternoon of October 12th, 2009. An unusual cold air mass allowed for the formation of snow during the early part of October as a broad area of low pressure moved from the central Plains, northeast across the Midwest causing a broad area of two to four inches of snow. This snowstorm was so unusual due to the early nature and how much fell.

## 32.) October and November had Sharply Contrasting Weather

October was cool and west across Wisconsin while November was warm and dry. In general, October temperatures were about 3 to 6 degrees below normal and precipitation about 2.5 to 3.5 inches above normal. November was a different story with temperatures about 6 to 8.5 degrees above normal and precipitation about 1 to 1.5 inches below normal (or only 1/3 to 2/3rds of normal). Snowfall was near normal to above average in October and below average in November.

La Crosse had their 4th coldest October with an average temperature of 44.5 degrees. This was 6.1 degrees colder than normal. It was their coldest October since 1925. It was also their 4th wettest October with 5.67 inches of precipitation. This was 3.51 degrees wetter than normal. It was their wettest October since 1911. October 2009 was also their wettest month this year. There has only been one other year (1900) in which October was the wettest month of the year. In contrast to the wet and cold October, November was warm and dry. La Crosse had their 4th warmest November with an average temperature of 42.7 degrees. This was 7.2 degrees warmer than normal. It was their 19th driest November with just 0.58 inches of precipitation falling (normal is 2.10 inches).

## 33.) Winter Storm/Blizzard –December 8-9th

One of the biggest winter storms in years pounded much of Wisconsin on December 8th and 9th. The snow developed as low pressure rapidly deepened as it moved from the Southern Plains through Missouri through southeastern Wisconsin and then across Lake Michigan. Heavy snow fell over a large portion of the area with numerous locations reporting over a foot. One of the hardest hit areas in the state were Dane County (reports up to 20.2 inches in McFarland) and the northwestern corner of the state near Lake Superior (24 to 29 inches in the Gogebic Range in Iron Co.). Otherwise a large portion of the state picked up 10 to 16 inches. The La Crosse Airport picked up 17 inches, Reedsburg gathered 16.6 inches, and Wautoma came in with 16 inches. Locations along the shoreline from Sheboygan to Kenosha received less than 1 inch, and in a couple location – none. This was due to warmer air close to the center of the low pressure system, as well as from the flow off the milder Lake Michigan waters.

The storm was the 6th highest snowfall in La Crosse.

The 14.7 inches reported at the Green Bay airport places this storm in the top 6 biggest snowstorms in Green Bay weather history and is the biggest December snowstorm ever. The 14.1 inches reported at Dane County Regional Airport was the 6th highest 2-calendar day total reported since records began there in 1948. The greatest 2-calendar day snowfall for Truax Field is 17.3 inches set back on December 2-3, 1990. Madison Truax Field's 48-hour total of 18.3 inches from 6 am Tuesday December 8th through 6 am Thursday December 9th, may be the greatest 48-hour total at that location going back to 1948. We will have to double-check the record books to be sure.

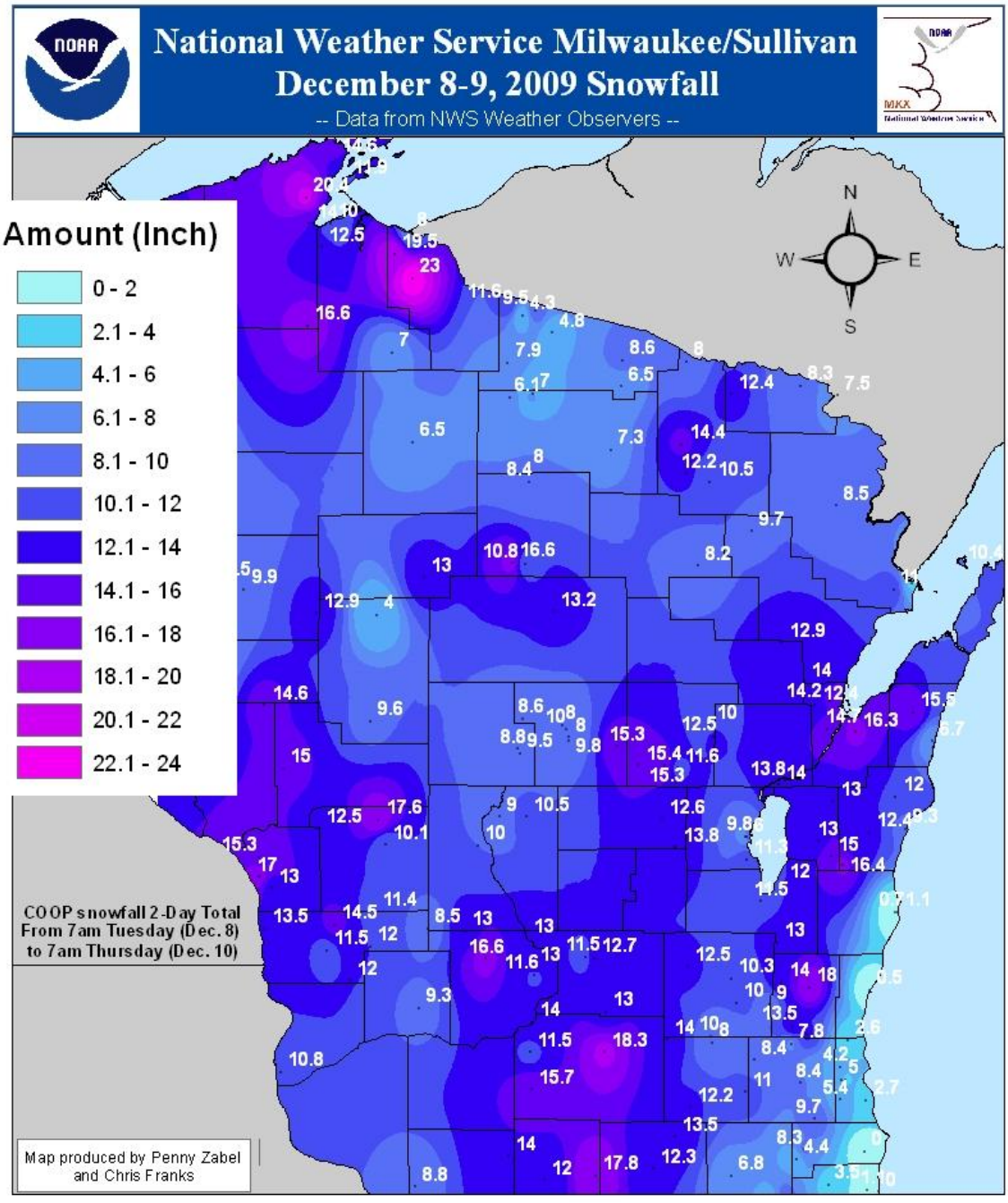
Strong winds in response to the deepening low created blowing snow and near blizzard conditions. Winds gusted to over 50 mph in Door County and 48 mph at the NWS Green Bay office. In southern Wisconsin, winds gusted up to 45 mph near Lake Michigan. The winds in combination with the weight of the snow on tree branches resulted in thousands of broken tree branches that snapped power-lines. Tens of thousands of customers lost electrical power across the state.

The low pressure system not only produced heavy snowfall and strong winds across parts of Wisconsin, but produced very low barometric pressure readings as well. Milwaukee began observing a decrease in pressure the evening of the 7th, with the pressure dropping from 30.28 inches (1026.4mb) to 28.84 inches (976.8mb) by 8 am the morning of the 9th. The all-time

lowest barometric pressure experienced in Milwaukee was 28.71 inches back on April 3, 1982. Madison began seeing a decrease the evening of the 7th as well, dropping from 30.27 inches (1026.5mb) to 28.91 inches (979.8mb) by 7 am the morning of the 9th. The all-time lowest barometric pressure experienced in Madison was 28.62 inches (969 mb) back on April 3, 1982. The pressure dropped 42 mb from 1024 mb to 982 mb in 24 hours at Green Bay.

For more information please see the following links.
http://www.crh.noaa.gov/mkx/?n=120909_snow
http://www.crh.noaa.gov/grb/?n=091209_blizzard
http://www.crh.noaa.gov/arx/?n=dec0909

Snowfall totals from across the state can be seen in the graphic below. Late snow reports were not included.



# OTHER MISCELLANEOUS INFORMATION

(NOT IN ORDER OF OCCURRENCE OR IMPORTANCE)

## 1.) El Nino begins

In July, NOAA scientists announced the arrival of El Niño, a climate phenomenon that is defined by the periodic warming of central and eastern tropical Pacific waters. El Niño occurs on average every two to five years and typical lasts twelve months with influences on global weather, ocean conditions, and marine fisheries. NOAA expects this year's El Niño to continue strengthening during the fall months and to last through the winter of 2009-2010. Normally, temperature and precipitation impacts over the United States are typically weak during the summer and early fall, but strengthen during the late fall and winter. Wisconsin typically sees colder than normal temperatures during El Nino summers and early autumns. Impacts depend on a variety of factors but typically, El Niño brings beneficial winter precipitation to the Southwest and less wintery weather across the north. El Niño can also help to suppress Atlantic hurricane activity by increasing the vertical wind shear over the tropical Atlantic Ocean and Caribbean Sea. While El Niño can help suppress Atlantic hurricane activity, it can also produce damaging winter storms in California, increased storminess across the southern U.S., and severe flooding and mudslides in Central and South America.

## 2.) U.S. records its wettest October on record…and Wisconsin was wet

The U.S. recorded its wettest October in the 115-year period of record. The nationwide precipitation of 4.15 inches was nearly double the long-term average of 2.11 inches. October was also the first month since December 2007 that no region in the United States recorded below normal precipitation. Moderate-to-exceptional drought covered 12 percent of the contiguous United State, the second-smallest drought footprint of the decade. Wisconsin experienced its 3rd wettest October on record. Milwaukee finished the month with the 5th wettest October on record with 5.57 inches of precipitation. Madison had the 17th wettest October with 3.8 inches of rain and a trace of snow. The month was also the third coolest on record for the United States and the ninth coolest on record for the state of Wisconsin.

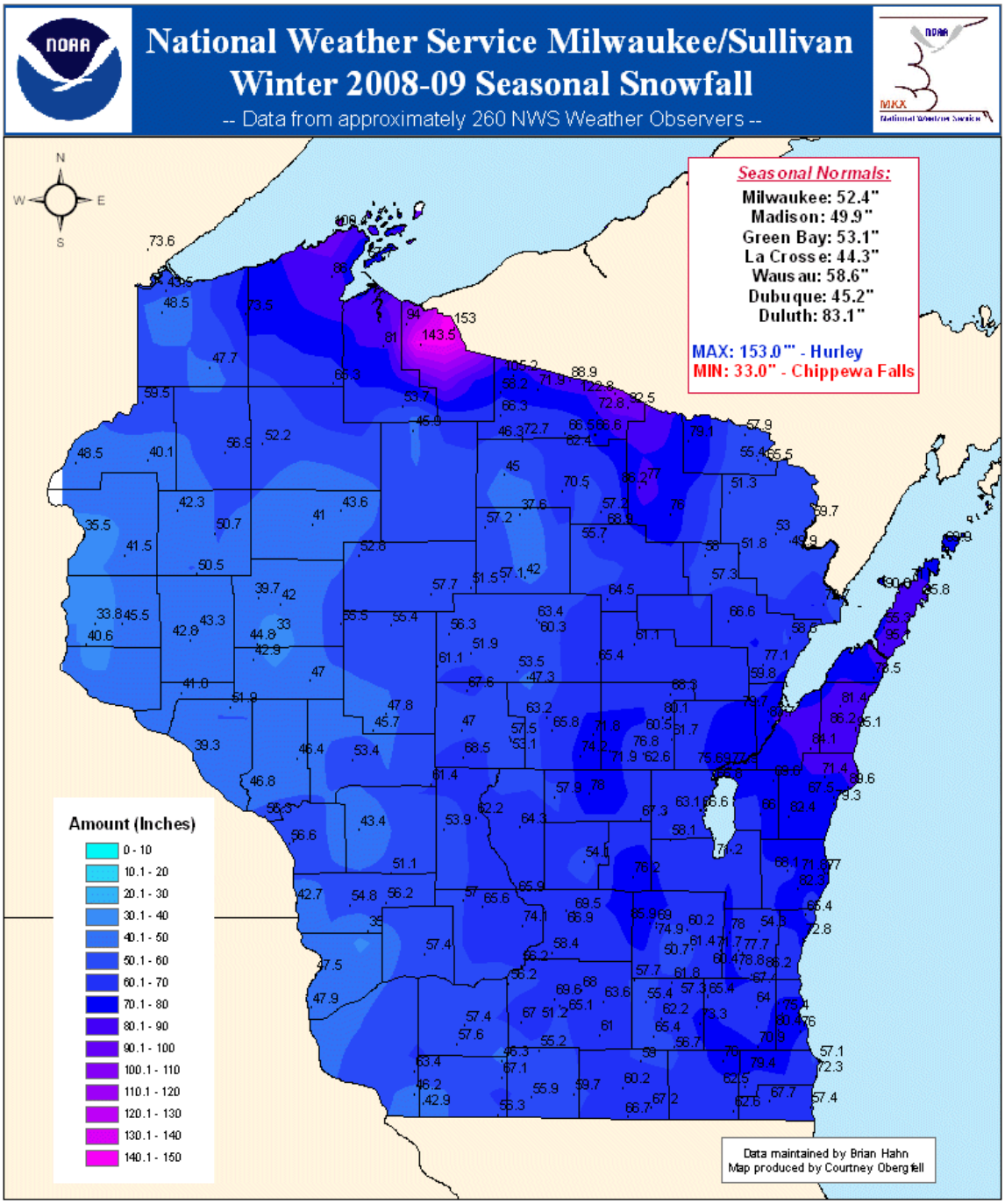
## 3.) Highest and lowest temperatures in Wisconsin

**Minimum:** -40F –Mondovi, Buffalo Co. – January 16, 2009
**Maximum:** 99 degrees –Crivitiz High Falls, Marinette Co. –June 24, 2009

## 4.) Greatest and least snowfall for 2008-2009 Winter Season

**Minimum:** 33.0" – Chippewa Falls
**Maximum:** 153.0" – Hurley

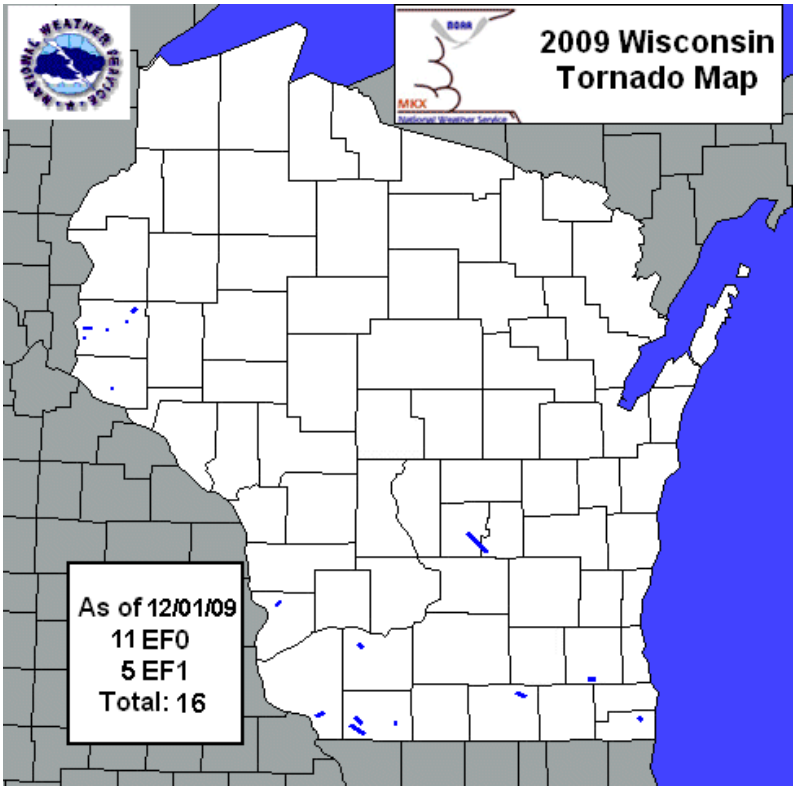
Snowfall was near-normal across the western and northern counties, above normal across the northeastern, east-central, south-central, and southeastern counties, and slightly below normal in the west-central counties. Normal seasonal snowfall totals range from around 40 inches over extreme southern Wisconsin on up to 160 to 170 inches in the Gogebic Range of Iron County.




## 5.) Wisconsin 2009 Tornado Season

Only 16 tornadoes were documented across Wisconsin during 2009 (normal is 21). All of them were weak – of the EF0 or EF1 variety.

In St. Croix, 5 tornadoes were reported, the highest county total for the year. Elsewhere, 3 were surveyed in Lafayette County, and one in each of the following counties: Pierce, Crawford, Iowa, Rock, Waukesha, and Kenosha. Another tornado crossed from Marquette into Green Lake County. No deaths or injuries were reported. Collectively, the tornadoes resulted in at least $653,000 in property damage, and at least $22,000 in crop damage. The Marquette/Green Lake County tornado (EF1) had the longest path of 9.3 miles and was the widest at 150 yards. Luckily it traveled through rural areas which limited its impact.




## 6.) Wisconsin Weather-related Fatalities and Injuries

Here's the listing of 2009 direct, weather-related fatalities:

| Date | Weather Event | # of Fatalities | Gender | Location |
|---|---|---|---|---|
| **Jan 13th** | Extreme Cold/Wind Chill | 1 | Male | Sawyer Co. |
| **Jan 15-16th** | Cold/Wind Chill | 1 | Unknown | West WI |
| **Jan 24th** | Cold/Wind Chill | 1 | Male | Brown Co. |
| **Jan 24th** | Cold/Wind Chill | 1 | Female | Florence Co. |
| **Feb 8th** | Extreme Cold/Wind Chill | 1 | Male | Sawyer Co. |
| **Feb 11th** | Extreme Cold/Wind Chill | 1 | Female | Sawyer Co. |
| **July 10th** | Strong Wind | 1 | Unknown | Dane Co. |

Here's the listing of 2009 direct, weather-related injuries:

| Date | Weather Event | # of Injuries | Gender | Location |
|---|---|---|---|---|
| **Jan 15th** | Extreme Cold/Wind Chill | 2 | Unknown | Dane Co. |
| **Feb 18th** | Winter Storm | 2 | Unknown | Grant Co. |
| **April 17th** | Wildfire | 1 | Unknown | Adams Co. |
| **July 23rd** | Lightning | 1 | Female | Rock Co. |